

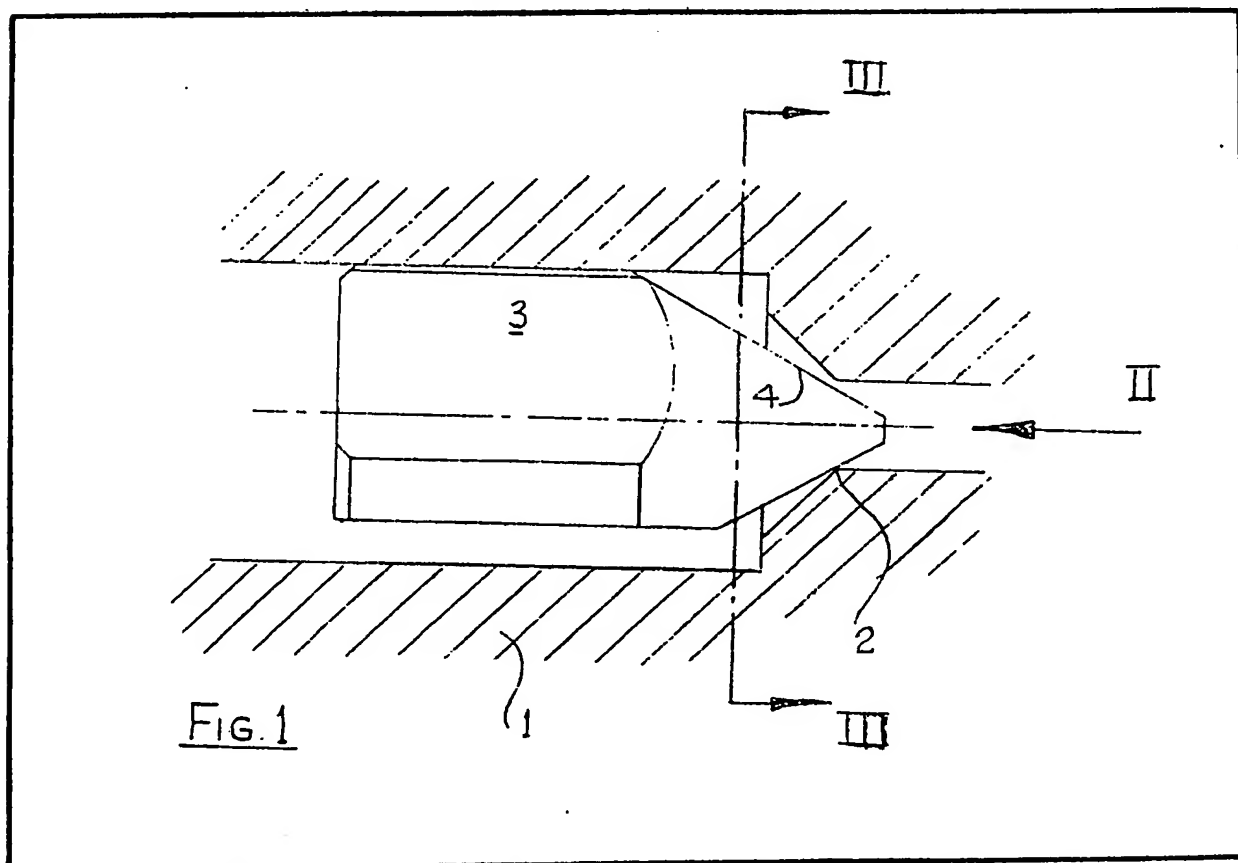
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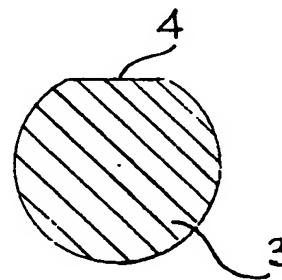
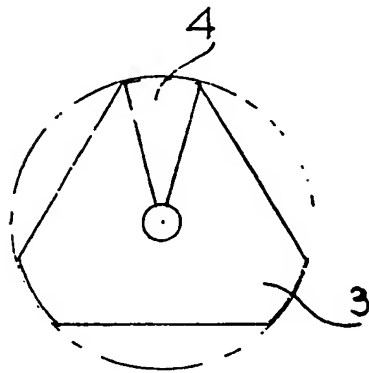
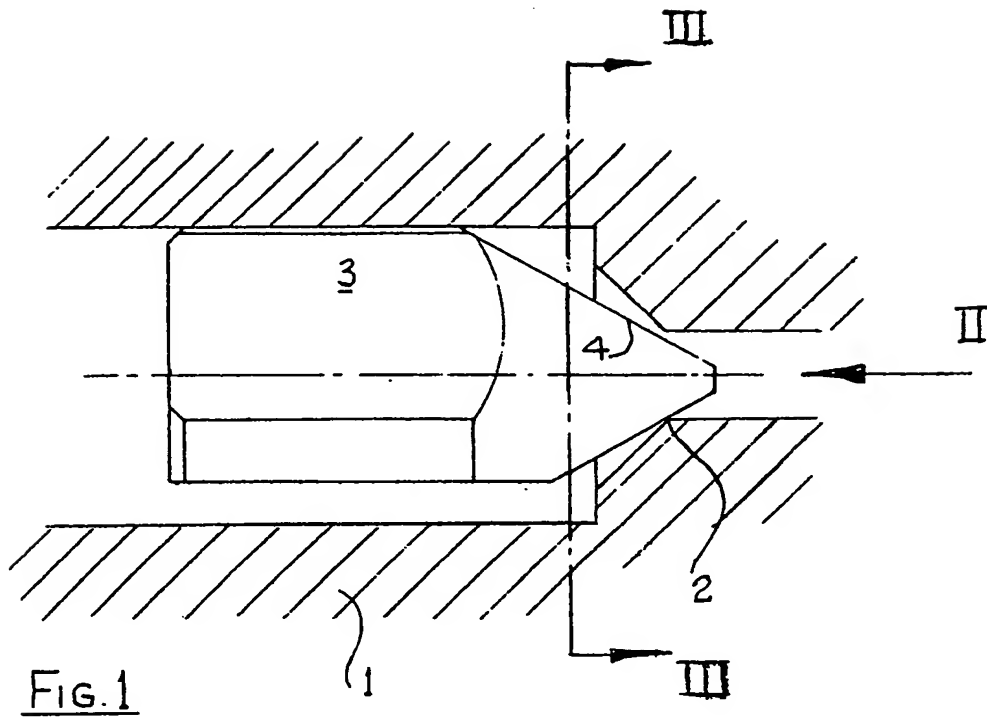
(54) Combined check valve and
restrictor

(57) The combination has a valve
body (1), valve seat (2), a movable
valve-closure member (3) engageable
with the seat and a small gap, e.g.
formed by a flat (4) between the
closure member and the seat, to
afford restricted flow of liquid through
the valve, when the closure member is
engaged on the seat.



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SPECIFICATION **Hydraulic valves**

Some hydraulic circuits require to have a check valve in parallel with a restrictor. The purpose of the restrictor is to permit a controlled flow, at a slow rate, of liquid from the circuit, during which time the check valve is closed. The purpose of the check valve is to permit rapid flow of liquid, from a suitable source, to make up in the circuit, when required, the liquid which has been previously lost from the circuit by leakage of liquid through the restrictor.

Even when a filter is used to filter liquid flowing into the circuit through the check valve, dirt can get into the circuit and this dirt can cause the restrictor, as liquid leaks through it, to slit up. This affects the performance of the restrictor and it has not, hitherto, been easy to remove the dirt from the restrictor.

It is an object of the invention to provide an improved check valve and restrictor which are in parallel.

According to this invention a combined check valve and restrictor has a valve body, a valve seat, a movable valve-closure member engageable with the seat and a small gap between the closure member and the seat, to afford restricted flow of liquid through the valve, when the closure member is engaged on the seat.

The small gap may be formed entirely by modification of the surface of the valve-closure member, or entirely by modification of the valve body and the valve seat or by modification of all three. For example, a flat may be formed on part of the surface of the valve-closure member so that there is a gap between it and the valve seat.

When the combined check valve and restrictor is included in a hydraulic circuit and the check valve is closed, controlled leakage from one side of the check valve to the other by way of the restrictor can occur. When the check valve is open, liquid will flow over the valve-closure member and flush away from the flat any dirt which may be tending to silt up the restrictor.

Thus, the restrictor will be cleaned each time the check valve is opened to make up liquid lost from a hydraulic circuit associated with the combined check valve and restrictor.

A combined check valve and restrictor in accordance with an embodiment of the invention is illustrated in the accompanying drawings of which

Figure 1 is a sectional view of part of the combined check valve and restrictor,

Figure 2 is an end view of the valve-closure member looking in the direction II shown in Figure 1, and

Figure 3 is a sectional view taken along the line III—III of Figure 1.

Referring to the drawings, the combined check valve and restrictor comprises a valve body 1, a valve seat 2 formed in the body 1, and a valve-closure member 3 which will normally be urged into engagement with the valve seat 2 by a suitable spring (not shown).

Part of the surface of the valve-closure member 3 is provided with a flat 4 which, when the member 3 is urged against the valve seat 2, provides a small gap forming a restrictive orifice between the member 3 and the seat 2.

When the check valve is closed, that is to say the member 3 is urged against the valve seat 2, a controlled flow of leakage can take place from one side of the valve to the other. When the check valve is open, say to charge a circuit with which it is associated with liquid, the liquid flowing between the member 3 and the seat 2 will flush away any dirt which has previously lodged between the flat and the seat. The triangular shape of the flat (see Figure 2) will assist the flushing away of any dirt.

Claims

1. A combined check valve and restrictor having a valve body, a valve seat, a movable valve-closure member engageable with the seat and a small gap between the closure member and the seat, to afford restricted flow of liquid through the valve, when the closure member is engaged on the seat.

2. A combined check valve and restrictor as claimed in Claim 1, in which the small gap is provided by a flat formed on part of the surface of the closure member.

3. A combined check valve and restrictor substantially as hereinbefore described with reference to the accompanying drawings.